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Climate and Ties in Workplace versus Sense of Danger and Stress, Based on Empirical Research in the Aviation Industry

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Abstract: The climate of the workplace, as well as the issues of relations and ties in the professional environment have long aroused considerable interest among psychologists and management practitioners. The organizational climate, which is defined as a set of beliefs about the organization, its relations, the atmosphere of the workplace, circulation of communication, development opportunities, etc., has often been associated with well-being and job satisfaction. Performing work related to numerous stress factors and difficult situations may significantly affect how both the professional environment and employees' well-being are perceived. Many empirical studies concerning work psychology and organization, including the works of Rosenstiel and Boegel, Gonzales-Roma, Peiro, Schneider and Earhart underline the importance of the organization climate in the construction of efficient and effectively functioning organizations. One of its important aspects is the level of social relationships and cooperation within an organization. Ties in the workplace are defined as the quality and depth of relations between members of an organization. Studies presented in this paper are of an exploratory nature due to the sector specificity, i.e., aviation and provision of services related to ground control operations. The aim of the empirical research presented herein is to verify the assumption about mutual relations between such variables as the perceived climate of the workplace and interpersonal bonds, as well as experiencing negative emotional states, such as the sense of danger and stress. The psychological literature suggests that low evaluation of the organizational climate parameters should be related to worse, more negative evaluation of the workplace and that the dissatisfaction within the scope of ties and relations with employees affects the perception of stress and threat. In the course of the study, 326 persons working at Pyrzowice and Szymany (Poland) and Kosice (Slovakia) have been examined. Polish employees dominated in this group (250 persons). The remaining group was constituted of individuals working at the Kosice (Slovakia) airport. The respondents represent a specific professional group. The authors tried to learn the specificity of the stress and threat experiencing process due to organizational variables—such as aspects related to evaluation of the workplace and the feeling of ties. To achieve this goal, in the course of statistical analyses, models were built to predict the sense of danger and stress among the surveyed population. A hierarchical regression analysis was carried out in order to determine which of the variables allow predicting the sense of danger and stress in the examined occupational group. The results showed that the higher sense of threat was predicted by the less positive views about the workload, the social support and by the higher ratings of ties in the workplace. In this model, the statistically significant predictors of the sense of threat were the perception of workload ($\beta = -0.184$; s.e. $= 0.29$; $t = -3.297$; $p < 0.001$), the social support ($\beta = -0.272$; s.e. $= 0.52$; $t = -3.916$; $p < 0.001$) and ties in the workplace ($\beta = 0.115$; s.e. $= 0.51$; $t = 2.162$; $p = 0.031$). Additionally, the higher level of sense

of stress was predicted by the less positive views about the workload, fair play and by the higher sense of threat. The final model explained 12% of all variability regarding the sense of stress ($R^2 = 0.115$; F [8, 317] = 5.122; $p < 0.001$). In this model, the statistically significant predictors of the sense of stress were the workload (β = − 0.120; s.e. = 0.11; t = −2.079; $p = 0.038$), sense of justice (β = 0.160; s.e. = 0.20; t = 1.965; $p < 0.001$) and the sense of threat (β = 0.219; s.e. = 0.02; t = 3.859; $p < 0.001$). The interest in employees from the aviation sector stems from the lack of empirical data on how people working in this industry function psychologically. This branch of industry is currently developing extremely dynamically and is expected to evolve even more in the wake of the industrial revolution 4.0. Work in the field of modern industry 4.0 forces the employees to acquire many important competencies related to managing new, automated working conditions. As suggested by some authors (Popkova, 2019; Neufeind, 2018), in the light of the 4.0 revolution, one must assume that both the requirements of the work environment and reactions and behavior of employees will differ from the more typical and stable organizational conditions. Meanwhile, in the light of automation and specificity of the industry in question, not much attention is paid to human resources, who—while cooperating in various teams (organic and inorganic)—experience various challenges, as well as difficulties resulting from their professional work.

Keywords: climate in workplace; ties in workplace; sense of danger; occupational stress; aviation industry

1. Introduction

Professional work is a fundamental area of human activity that is consistently of great interest to researchers and practitioners in the area of management. The climate of the workplace, as well as the issues of relations and ties in the professional environment have had an especially long empirical tradition in psychological sciences [1–8]. Contemporary trends emphasized in industrial and organizational psychology, related to the promotion of organizational involvement and well-being suggest that organizational and environmental factors have a major impact upon employee welfare [9–11]. In the case of high-risk professions, with existing specific stress factors, it is hard to ensure the proper level of welfare without searching for fundamental dependencies between what seems to be the most basic element of work, which is its social environment, relations in the workplace and their subjective evaluation and the sense of security [12]. The organizational climate, which might also be referred to as the climate of the workplace, is defined by the researchers as a set of beliefs about the organization, relationships there, atmosphere in the workplace, transfer of communication, development opportunities, etc. It is often connected with employee welfare and job satisfaction [1,2,8,13,14]. The sense of threat, in turn, is defined by psychologists as encountering or experiencing concerns related to the consequences of potential or real dangers [15]. Facing specific professional situations generates a specific cognitive and imaginational image, including the entirety of experiences related to the workplace. This may include a variety of elements, but will be primarily related to internal discomfort and concern about potentially dangerous situations in the workplace (such as blast, fire and explosion), as well as concerns about actual and present dangers existing in everyday, routine work activity. Additionally, the construct referred to as "the sense of threat" consists of potential actions resulting from the avoidance of danger (for instance, at the behavioral or cognitive level, constant vigilance and attentiveness to dangerous elements of the work environment).

On the other hand, the construct of stress is commonly applied to external circumstances, requirements, burdens or difficult situations or to define unpleasant emotional experiences, tension and discomfort [16]. These two ways of understanding stress are reflected in theoretical propositions and studies concerning the discussed problem. Contemporary models of psychological stress do not locate the sources of stress exclusively in the individual or in its environment, but they are more

likely to indicate the specific kind of relation (interaction and transaction) between the subject and its environment [17]. General assumptions of the concept of psychological stress [18–21] point out that the model of organizational stress should take into consideration five groups of variables. These are primarily objective disruptions of the process of communicating the requirements of the professional role, processes of cognitive evaluation of the organizational situation as well as of oneself, and the result of this evaluation (perceived organizational stress). Further variables refer to direct reactions of the employee to the perceived stress (these are emotional and behavioral reactions) and distant consequences of the stress (treated individually or organization-wide). It should also take into account the variables modifying the relationships between specified categories. Frontier research of R. Kahn and his collaborators [18] indicated the growing role of professional stress in undermining organizational efficiency. Indeed, research has demonstrated that stress at work, being related both to negative attitudes and behaviors of employees, imposes economic costs [22,23]. Kahn's research was the basis of the concept of professional stress resulting from ambiguity of one's professional role, inadequate adjustment of tasks and duties and excessive workload.

A factor with a major impact upon the perception of the work environment is also perceiving and building the social ties [16] that might constitute a specific source of social support in difficult situations. Tie-building factors in the workplace, according to the author, are the sense of relation and familiarity with the team, desire to cooperate, sense of trust and safety in the group and acceptance of the leader as an authority ensuring team safety. Interpersonal ties in the workplace seem to be significant as a catalyst of perceived stress and threat, although empirical research does not point at direct relationships between these variables [12].

The present study is exploratory. Its purpose is to study the interrelationships between the perception of the workplace climate and the sense of bond and the level of stress and sense of danger. Due to the interesting and poorly understood professional group (airport ground workers), the subject of the study was also to determine predictors of their potential sense of threat and stress.

2. Present Study

Aviation sector employees are an interesting professional group, at the same time not very well known in terms of perception of psychological mechanisms and phenomena. The efficiency of their day-to-day work is based on professionalism and cooperation, as well as successful dealing with difficult and threatening situations. Particular attention should also be paid to the characteristic features of their work, which is the increasing automation and robotization of the environment of their organization. In their everyday job, the employees subjected to the research are in touch both with the organic and inorganic team, which might affect significantly their perception of relation and the sense of interpersonal ties in the workplace.

With regard to the aim of the research, the following research questions were formulated:

1. Are there any and what are potential correlations between the perception of ties and climate of organization and the sense of stress and the sense of threat of aviation sector employees?
2. Which of the variables subjected to the study (constituents of the climate of the workplace and the quality of ties in the workplace) allow predicting the level of the sense of threat and perceived stress in the researched professional group?

3. Material and Methods

3.1. Participants

The study included 326 persons working in the aviation sector (holding posts such as security specialists, aircraft mechanic, assistant mechanic, aviation engineer, manager, manual worker, aircraft structural repair technician, rescue firefighter, chemical technician, etc.)The missing data was not greater than 0.5%. All the missing data were excluded from the analysis. However, the exact information about the occupational category of each participant was not collected in the presented study. The average

age of the subjects was 39.3 years (*SD* = 10.7). Their average professional experience was 16.7 years (*SD* = 11.3), and their average professional experience at the given post was 9.01 years (*SD* = 2.5). The sample consisted mostly of men (n = 278; 85.3%). Participants were working at the following airports: Pyrzowice and Szymany (Poland) and Košice (Slovakia). People employed at the Polish airports (*n* = 250) were predominant. The remaining group included staff employed at the airport in Košice (Slovakia).

All measures were administered in the Polish and Slovak languages. All the subjects were notified about the goal of the research, and they agreed to participate in the research. While conducting the study, we followed the recommendations of the Declaration of Helsinki.

3.2. Materials

3.2.1. Sense of Threat

The research applied 'The Feeling of Threat at Work Questionnaire' by Mamcarz [15]. The instrument helps to measure the sense of threat understood as experiences of concerns related to the consequences of current/potential dangers in the workplace. It consists of 54 statements assessed on a 5-point Likert scale (1—never, 5—very often). It allows measurement of three indicators: internal discomfort (example items: "When I'm at work, it's difficult for me to concentrate on anything" or "I am not able to fully do my work through thoughts that come to me"), concerns about current threats (example items: "I'm worried about what will happen at work" or "At work, I'm afraid for my life") and striving to avoid the danger (example items: "There are dangerous situations at work that I avoid" or "At work I check the completed task several times"). Both for the general score, as well as for the subscales, higher scores denote the higher level of the sense of threat.

In this study, the scale performed good or at least satisfactory internal consistency (full scale: $\alpha = 0.96$; internal discomfort: $\alpha = 0.95$; concerns about current threats: $\alpha = 0.86$; striving to avoid danger: $\alpha = 0.71$). Additionally, regarding the questionnaire, the three-dimensional structure of the scale performed satisfactory fit, which proved the theoretical validity of the measure (information about fit indices and standardized factor loadings are in Appendix A, in Tables A1 and A2).

3.2.2. Sense of Stress

The instrument applied to measure the perceived stress was 'The Stress Perception Questionnaire' by Plopa and Makarowski [24]. This measure consists of 27 items assessed on a 5-point Likert scale (1—definitely false, 5—definitely true). Beside the general scores, particular questions within the questionnaire create three subscales. The first is emotional tension. This refers to feeling high levels of anxiety, insecurity, extreme fatigue and resource depletion (example items: "I feel anxiety and more and more things annoy me" or "I have difficulty relaxing, although I try to"). The next subscale measures the level of external stress by way of assessing the stress felt by being in situations exceeding the abilities of the individual (such as mismatched tasks or work area activity), as well as the sense of being unjustly assessed and rated by others. This aspect is characterized by perceiving a sense of helplessness and solitude (example items: "I'm fed up with constant conflicts with various people" or "I am criticized too often"). The third subscale is intrapsychic stress, expressed by the lack of ability to deal with the experienced emotional states. This scale expresses pessimism, negative perception of oneself and the external world (example items: "I have my plans, but I'm afraid that I will not implement them because my psyche is too weak" or "Thinking about the future discourages me from almost everything"). Both for the general score, as well as for the subscales, higher scores denote the higher level of the sense of stress.

The original scale also contains a subscale measuring the tendency to 'feel' good (example items: "I'm always fair to others" or "I have always obeyed my parents, my superiors"). However, the scores obtained in that scale were not analyzed in the presented study.

In this study, the scale performed satisfactory reliability level (full scale: $\alpha = 0.85$; emotional tension: $\alpha = 0.76$; external stress: $\alpha = 0.70$; intrapsychic stress: $\alpha = 0.73$). Additionally, despite the fact that some of the factor loadings were relatively low, the three-dimensional structure of the scale performed satisfactory fit, which proved the theoretical validity of the measure (information about fit indices and standardized factor loadings are in Appendix A, in Tables A1 and A3).

3.2.3. Ties in the Workplace

The quality of ties in the workplace was measured by the Scale of Ties in the Workplace based on the Social Ties Scale of Skarżyńska [25]. Six items from the original version of the scale were used (example items: "In the workplace, I have many people close to me" or "I don't know much about the people around me in the workplace"). The subjects expressed the level of satisfaction from personal ties with reference to professional environment and the people they cooperate with on a 5-point Likert scale (1—definitely not, 5—definitely yes). Higher scores denote closer relationships in the workplace.

In this study, the scale performed satisfactory internal consistency ($\alpha = 0.83$). As intended, the theoretical structure of the scale was unidimensional (information about fit indices and standardized factor loadings are in Appendix A, in Tables A1 and A4).

3.2.4. Workplace Climate

The workplace climate was assessed by means of the 29-item 'Areas of Worklife Questionnaire' by Izwantowska and Terelak [26], which, also on a 5-point Likert scale (1—definitely disagree, 5—definitely agree) facilitates the assessment of the following six areas: workload (example items: "I don't have enough time for the work I have to do" or "I work intensively for long periods of time"), sense of control at work (example items: "I can influence the way I do my work" or "I have professional autonomy, independence at work"), perception of gratifications at work (example items: "My work is appreciated" or "I don't get recognition for all the things I've contributed to"), perception of social support (example items: "My collaborators trust each other" or "Members of my team support each other"), sense of justice (example items: "Reward is fairly distributed here" or "Your promotion options depend strictly on your merits") and compliance of the employee values with the organizational values (example items: "My values and those of the company overlap each other" or "Working here forces me to act against my principles"). Higher scores denote the better quality of the work life in terms of a lower level of workload, higher sense of control, more positive perception of the social support and social justice and higher compliance between employee and organizational values.

In this study, the internal consistency was satisfactory in the case of most of the scales, with borderline reliability for gratifications and social support subscales (workload: $\alpha = 0.76$; sense of control: $\alpha = 0.72$; gratifications: $\alpha = 0.61$; social support: $\alpha = 0.78$; social justice: $\alpha = 0.61$; values: $\alpha = 0.79$). A proposed six-factor model presented an acceptable, however borderline fit (information about fit indices and standardized factor loadings are in Appendix A, in Tables A1 and A5).

4. Results

Descriptive statistics for variables and internal consistency of the measures are presented in Table 1.

An analysis of the correlations was performed using Pearson's correlation coefficients. The results of the analysis are presented in Table 2.

We found a statistically significant relationship between the sense of threat and the rating of ties in the workplace ($r = 0.147$; $p = 0.008$), as well as with some variables related to the climate of organization, i.e., workload ($r = -0.226$; $p < 0.001$), the social support ($r = -0.276$; $p < 0.001$) and values ($r = -0.142$; $p = 0.010$). The higher level of threat was related to a higher rating of ties in the workplace and more negative perception of workload, the social support and values. Additionally, internal discomfort was related to the higher ratings of ties in the workplace ($r = 0.183$; $p < 0.001$), and less positive views about workload ($r = -0.222$; $p < 0.001$) and community ($r = -0.240$; $p < 0.001$). Additionally,

concerns about the current threat were related to the more negative perception of workload (r = –0.185; $p < 0.001$), gratifications (r = –0.169; $p = 0.002$), the social support (r = –0.262; $p < 0.001$), the social justice (r = –0.186; $p < 0.001$) and values (r = –0.199; $p < 0.001$).

Table 1. Ties and climate of organization and the sense of stress—descriptive statistics.

		Mean	Median	Standard Deviation	Min	Max
Ties in the workplace	Evaluation of the ties	179.0	18.0	2.6	5	25
Evaluation of the professional life areas	Workload	21.0	21.0	4.8	7	30
	Sense of control	10.8	11.0	2.9	3	15
	Gratifications	13.8	14.0	2.6	5	20
	Social support	19.7	21.0	3.4	6	25
	Social justice	21.2	22.0	3.7	8	26
	Values	19.0	20.0	3.7	5	25
Sense of threat	General sense of threat	108.0	104.0	25.3	57	209
	Internal discomfort	71.9	71.0	18.5	36	141
	Concerns about current threats	22.9	22.0	6.1	11	47
	Striving to avoid dangers	13.5	13.0	3.4	6	23
Sense of stress	General sense of stress	53.8	54.0	8.9	24	76
	Emotional tension	17.6	18.0	3.4	7	30
	External stress	18.3	18.0	3.4	9	27
	Intrapsychic stress	18.0	18.0	3.8	7	27

Table 2. The relations between the perception of ties and climate of organization, as well as the sense of stress and the sense of threat—Pearson's correlations coefficients.

	GST	GST 1	GST 2	GST 3	GSS	GSS 1	GSS 2	GSS 3
TIW	0.147 **	0.183 ***	0.085	−0.052	0.108	0.109 *	0.021	0.137
WL	−0.226 ***	−0.222 ***	−0.185 ***	−0.142 *	−0.152 **	−0.170 **	−0.094	−0.120 *
G	−0.078	−0.044	−0.103	−0.152 **	−0.128 *	−0.167 **	−0.078	−0.081
A	−0.109	−0.054	−0.169 **	−0.210 ***	−0.079	−0.144 **	−0.068	0.003
SS	−0.276 ***	−0.240 ***	−0.262 ***	−0.270 ***	−0.147 **	−0.173 **	−0.137 *	−0.069
SA	−0.073	0.023	−0.186 ***	−0.330 ***	0.011	−0.048	−0.016	0.083
V	−0.142 *	−0.080	−0.199 ***	−0.263 ***	−0.054	−0.149 **	−0.018	0.022

Notes: TIW—Ties in the workplace; WL—Workload, C—Sense of control, G—Gratifications, SS—Social support, SA—Support assessment, V—Values; GST—Generalized sense of threat, GST 1—Internal discomfort, GST 2—Concerns about current threats, GST 3—Striving to avoid threats; GSS—Generalized sense of stress, GSS 1—Emotional tension, GSS 2—External stress, GSS 3—Intrapsychic stress. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Additionally, we noted a statistically significant correlation between the sense of stress and some variables related to the climate of organization: workload (r = –0.152; $p = 0.006$), the sense of control (r = –0.128; $p = 0.020$) and the social support (r = –0.147; $p = 0.008$). The higher level of stress was related to more negative views about workload, the sense of control and the social support. Additionally, the emotional tension was significantly correlated with the higher rating of ties in the workplace (r = 0.109; $p = 0.049$) and more negative perception of workload (r = –0.170; $p = 0.002$), the sense of control (r = –0.167; $p = 0.002$), gratifications (r = –0.144; $p = 0.009$), the social support (r = –0.173; $p = 0.002$) and values (r = –0.149; $p = 0.007$). Moreover, external stress was associated with less positive ratings of the social support (r = –0.137; $p = 0.013$), whereas intrapsychic stress correlated with more negative perception of workload (r = –0.120; $p = 0.030$).

In addition, the analysis of relations between the sense of threat and stress indicated there was a statistically significant correlation between them (r = 0.275; $p < 0.001$): the higher sense of threat was related to a higher level of stress.

Afterwards, a hierarchical analysis of regression was performed in order to specify which variables allow one to predict the sense of threat and the sense of stress. In further steps, the regression model included variables related to the assessment of organizational climate (M1) and the assessment of

ties in the workplace (M2). Additionally, in the third step of the model, the sense of threat (M3) was included in order to explain the variance in the sense of stress. We saw how the variance was explained by changes in the model. Herein, variance inflation factor (VIF) factors and the Durbin–Watson statistic in the case of each of the created models were close to 2, which suggest that the collinearity and autocorrelation of regression residuals did not distort the assessment of model parameters [27,28]. The results of the analysis are presented in Tables 3 and 4.

Table 3. Predictors of the generalized sense of threat—analysis of regression.

	The Explained Variable: Generalized Sense of Threat (GST)	
	M1	**M2**
Climate of organization		
Workload	−0.194 *** [0.305; −0.084]	−0.184 ** [−0.294; −0.074]
Sense of control	0.017 [−0.103; 0.137]	0.016 [−0.103; 0.135]
Gratifications	−0.037 [−0.169; 0.096]	−0.030 [−0.162; 0.102]
Social support	−0.284 *** [−0.421; −0.147]	−0.272 *** [−0.409; −0.136]
Sense of justice	0.171 [0.014; 0.328]	0.145 [−0.013; 0.303]
Values	−0.049 [−0.208; 0.110]	−0.049 [−0.207; 0.110]
Ties in the workplace		
Evaluation of the ties		0.115 * [0.010; 0.220]
R^2	0.119	0.132
ΔR^2		0.013 *
F	7.211 **	6.921 ***

Note: The table provides values of standardized regression coefficients, with 95% confidence interval (in square brackets). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 4. Predictors of generalized sense of stress.

	The Explained Variable: Generalized Sense of Stress (GSS)		
	M1	**M2**	**M3**
Climate of organization			
Workload	−0.167 ** [−0.280; −0.053]	−0.160 ** [−0.274; −0.046]	−0.120 * [−0.233; −0.006]
Sense of control	−0.113 [−0.236; 0.011	−0.114 [−0.237; 0.009]	−0.117 [−0.237; 0.003]
Gratifications	−0.060 [−0.196; 0.077]	−0.056 [−0.192; 0.081]	−0.049 [−0.183; 0.085]
Social support	−0.128 [−0.269; 0.014]	−0.120 [−0.261; 0.022]	−0.060 [−0.202; 0.082]
Sense of justice	0.210 * [0.048; 0.371]	0.192 * [0.029; 0.355]	0.160 * [0.000; 0.321]
Values	−0.027 [−0.190; 0.137]	0.078 [−0.031; 0.186]	−0.016 [−0.176; 0.145]
Ties in the workplace			
Evaluation of the ties		0.078 [−0.031; 0.187]	0.052 [−0.054; 0.159]
Sense of threat			
Generalized sense of threat			0.219 *** [0.107; 0.331]
R^2	0.067	0.073	0.115
ΔR^2		0.006	0.042 ***
F	3.822 *	3.571 *	5.122 ***

Note: The table provides values of standardized regression coefficients, with 95% confidence interval (in square brackets) * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The analysis of regression indicated that some variables related to the assessment of the climate of organization allow predicting the sense of threat (R^2 = 0.119; F [6, 319] = 7.211; $p < 0.001$). Including the assessment of ties in the workplace to the regression model generated a small, but a statistically significant increase in the explained variance of the model (ΔR^2 = 0.013; F [1, 318] = 4.671; p = 0.031). The final model explained 13% of all variability regarding the sense of threat (R^2 = 0.132; F [7, 318] = 6.921; $p < 0.001$). In this model, the statistically significant predictors of the sense of threat were the perception of workload (β = −0.184; s.e. = 0.29; t = −3.297; $p < 0.001$), the social support (β = −0.272; s.e. = 0.52; t = −3.916; $p < 0.001$) and ties in the workplace (β = 0.115; s.e. = 0.51; t = 2.162; p = 0.031). The higher sense of threat was predicted by the less positive views about the workload, the social support, and by the higher ratings of ties in the workplace.

The analysis of regression also showed that some variables related to the assessment of the climate of organization allow predicting the sense of stress (R^2 = 0.067; F [6, 319] = 3.822; p = 0.001). Including the assessment of ties in the workplace, however, did not induce a statistically significant increase of the explained variance of the model (ΔR^2 = 0.006; F [1, 318] = 1.991; p = 0.159). In the last step, the sense of threat was included in the model, which caused a statistically significant change regarding the variance explained by the model (ΔR^2 = 0.042; F [1, 317] = 14.891; $p < 0.001$). The final model explained 12% of all variability regarding the sense of stress (R^2 = 0.115; F [8, 317] = 5.122; $p < 0.001$). In this model, the statistically significant predictors of the sense of stress were the workload (β = −0.120; s.e. = 0.11; t = −2.079; p = 0.038), the sense of justice (β = 0.160; s.e. = 0.20; t = 1.965; $p < 0.001$) and the sense of threat (β = 0.219; s.e. = 0.02; t = 3.859; $p < 0.001$). The higher level of sense of stress was predicted by the less positive views about the workload, the perception of justice and by the higher sense of threat.

5. Discussion

The researched group consisted of experienced employees working within the aviation sector. Taking into account the average age and professional experience, it may be assumed that the subjects experienced a variety of difficult and dangerous situations in their work environment. Based on the responses given by the respondents, it was found there was a coexistence of the sense of threat and the positive feelings regarding the ties in the workplace. Positive correlation between the variables suggests that probably at the moments of experiencing the specific sense of threat in the workplace, the subjects are more likely to positively assess the relations in the organizational environment. Social support is indicated by psychologists as a significant resource in coping with workplace stress and work overload [29,30]. Simultaneously, expecting "potentially" threatening situations exists along with the more positive rating of social interactions. Mental preparation to cope with the requirements of the work community seems to be easier when we are aware of being within a supporting interpersonal environment. Additionally, experiencing concerns indicating excessive worrying about potential risk of threat is related to a simultaneously lower rating of professional environment, i.e., the sense of excessive workload (which is the main source of professional stress). Other aspects of professional environment—i.e., the possibility of receiving organizational support in the form of awards for the performed work, relation and the sense of community in the team, sense of justice and generally speaking—the compliance of personal values with organizational culture are assessed in a significantly negative way.

An interesting result, already known in the psychology of work and organization, however, new in view of the researched industry, are the correlations between studied variables and perceived level of stress.

Inadequate workload (in terms of quality, as well as quantity), the lack (or unsatisfactory) sense of control while performing professional tasks, as well as weak—i.e., rather negative and critical rating of interpersonal relations—"community" in the organization, coexist with the sense of a higher stress level of persons employed in the aviation sector. It should be underlined that a community should be defined as the quality of cooperation and evaluation of interpersonal relations in the workplace. This is

a different term and notion than the variability of ties. This result does not differ from the expectations of employees of other sectors concerning the satisfaction of basic needs and quality of cooperation. Practically speaking, all aspects of the professional environment—the sense of control, workload rating, awards in the workplace, compatibility of work with professed values, etc.—are meaningfully related to the sense of lower emotional tension. However, in the aspect of experiencing external stress, attention should be paid to the significance of the community assessment in the workplace and in the context of experiencing intrapsychic stress—the significance of adequate workload. A significant consequence of the deficits related to crucial aspects of work is the coexistence of the sense of threat and professional stress. The presented statistical analyses did not focus, however, on other relationships between these variables.

The analysis of predictors of the sense of threat indicated that primarily the experiencing of excessive workload and negative rating of the social environment quality in the workplace (mutual support, cooperation and showing positive feelings) is significantly related to the perception of the higher sense of threat by aviation sector employees.

The result that seems controversial is the increase of the sense of threat by high ratings of interpersonal ties (which remains somewhat contradictory to the assessment of community in the field of workplace climate). Based on psychological literature [12], it should be expected that social ties reduce stress caused by the feeling of threat, and they are also an important factor supporting the coping with negative emotions. The confirmation of the relationship presented in this article, according to the authors, requires further verification, particularly with regard to the direction and impact of dependencies. This results from the fact that the assessment of ties refers to a much deeper intimacy and the sense of close relationship with co-workers, than the assessment of social relations treated as an element of the workplace climate.

A significant predictor of the sense of stress in the researched professional group is excessive and inadequate professional workload and the perception of sense of threat in the workplace. Moreover, the professional stress in the researched professional group is increased by one of the aspects of organizational climate, which is the sense of justice in the workplace. This is an interesting result showing the tendency to generate higher psychological costs in the form of stress and its benchmarks due to a particular commitment to fair management of the workplace. This result suggests further hypotheses: the area of the sense of justice, which is measurable by the tool 'The Areas of Worklife Questionnaire', refers mainly to the sensations of employees concerning fair treatment, fair division of goods and awards and the promotional opportunities in the organization. The presented results would suggest that the higher rating of employees in this field is also related to the sensation of higher stress level. This result should inspire the managerial staff to set positive trends, as it has a real influence on personal processes in the organization.

Attention should also be paid to the necessity of creating a work environment with balanced duties and requirements. Maslach and Leiter [31–33] have pointed out for many years that the professional workload is the main predictor of professional burnout and ongoing "disturbed relations with professional work". In the case of the researched economic sector, the sense of increasing and permanent sense of threat most certainly entails the risk of enhanced psychological costs in the professional work of employed employees. From the point of view of human resource management, particular attention should be paid to adequate delegation of tasks and duties. There is a number of causes related to excessive workload [34], but the focus should be placed upon the provision of an adequate number of promotional opportunities, enhanced workstations ergonomics and realistic organizational requirements, especially due to the specific, often unique professional competencies required in the researched sector [35,36]. An interesting result among the researched male population of aviation industry employees proved to be the factor of community and meaningfulness of interpersonal relations in the workplace. Aspects related to creating efficiently functioning and coexisting teams prove to be significant in decreasing the sense of threat in the analyzed group [37]

The presented research has some limitations that we want to address. First of all, there are some constraints mainly within our data set, which included a limited number of demographic variables. For example, we did not collect information about participant occupation and history of employment. This flaw made it impossible to investigate the differences in the effects of the duties of each occupational group. Therefore, addressing this issue in future research endeavors seem to be essential. Consistent with this problem, our dataset also prevents us from examining the possible moderating effect of gender in the relations between variables (or at least made it difficult). This limitation is caused by the relatively small number of women participating in the study (n = 48). Therefore, we encouraged other researchers interested in investigating the presented problems to verify possible differences in relations between variables separately for men and women.

Additionally, the group seems to be relatively small. Hence, we suggest verifying our findings with a more representative sample. Despite this flaw, we assumed that the sample size in the presented study allowed us to correctly determine whether a correlation coefficient differs from zero. Considering that the presented effects were mostly small, the total sample size required to make a statement about the relationship between given variables equals N = 194 [38]. Therefore, our results seem meaningful, with an obvious recommendation to replicate them.

6. Conclusions

Summing up the previous analyses and reflections concerning the survey of aviation sector employees, it should be emphasized that the presented research was carried out with the usage of questionnaires and due to the research problem, the authors included complex and long diagnostic tools. Certainly a significant obstacle for the respondents was completing a large number of tests—but what is worth underlining, it was the only possible way of obtaining quantitative data.

The focus of presented research was on a group of employees permanently employed in a variety of airport positions. Due to the amount of the group, no professional subgroups were identified (e.g., mechanic, engineer, etc.). For this reason, the analysis of the results is to some extent a generalization regarding employees of various levels employed in airport ground services.

The studied variables are dynamic. In order to build adequate programs supporting a given sector, the level of perceived stress and level of danger should be systematically controlled and diagnosed. This is especially so when it comes to employee perceptions regarding the assessment of the work environment—primarily interpersonal relations and a sense of ties. It is also vital to suggest that the presented study took place before the COVID-19 pandemic, which greatly affected the aviation industry, causing huge challenges to employers and airport employees. Perhaps a replica of the study in current circumstances would show significantly higher results in terms of feelings of danger and stress.

The authors' further direction of research will be longitudinal research on psychological variables related to the working environment in industry 4.0, with the dominance of modern technologies.

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Appendix A

Table A1. Theoretical structure of the scales used in the study.

	χ^2 (*df*)	CFI	TLI	RMSEA	90% CI RMSEA
Sense of threat—3 factors	1304.38 (1271)	1.00	1.00	0.01	0.000–0.014
Sense of stress—4 factors	90.00 (76)	1.00	0.99	0.02	0.000–0.034
Ties in the workplace—1 factor	20.25 * (9)	0.99	0.98	0.05	0.021–0.082
Areas of work life—6 factors	1313.12 *** (362)	0.93	0.92	0.07	0.070–0.079

Notes: Due to the ordinal level of measurement, diagonally weighted least squares (DWLS) estimation was used. * $p < 0.05$; *** $p < 0.001$

Table A2. Standardized factor loadings for The Feeling of Threat at Work Questionnaire.

Factor	Indicator	Z	*p*	λ
Internal discomfort	item 5	36.31	<0.001	0.51
	item 6	38.75	<0.001	0.55
	item 11	42.05	<0.001	0.60
	item 12	49.31	<0.001	0.68
	item 13	47.90	<0.001	0.67
	item 14	44.99	<0.001	0.64
	item 15	36.87	<0.001	0.51
	item 16	43.22	<0.001	0.58
	item 17	39.49	<0.001	0.52
	item 21	46.89	<0.001	0.67
	item 22	41.60	<0.001	0.59
	item 23	46.20	<0.001	0.65
	item 25	46.31	<0.001	0.64
	item 26	42.80	<0.001	0.58
	item 27	43.60	<0.001	0.60
	item 28	46.22	<0.001	0.64
	item 29	47.00	<0.001	0.65
	item 30	44.93	<0.001	0.60
	item 31	49.38	<0.001	0.71
	item 32	47.86	<0.001	0.66
	item 33	45.17	<0.001	0.60
	item 34	47.78	<0.001	0.67
	item 35	43.90	<0.001	0.61
	item 36	38.77	<0.001	0.54
	item 38	46.79	<0.001	0.65
	item 39	48.43	<0.001	0.65
	item 41	46.09	<0.001	0.65
	item 42	42.15	<0.001	0.58

Table A2. *Cont.*

Factor	Indicator	Z	*p*	λ
	item 43	46.31	<0.001	0.65
	item 44	43.82	<0.001	0.62
	item 45	43.22	<0.001	0.62
	item 47	42.97	<0.001	0.59
	item 50	35.27	<0.001	0.49
	item 51	38.91	<0.001	0.56
	item 52	37.99	<0.001	0.52
	item 53	33.06	<0.001	0.46
Concerns about current threats	item 1	22.19	<0.001	0.35
	item 2	28.08	<0.001	0.44
	item 3	34.69	<0.001	0.56
	item 4	39.64	<0.001	0.65
	item 7	35.98	<0.001	0.60
	item 8	43.17	<0.001	0.71
	item 9	40.48	<0.001	0.65
	item 10	37.84	<0.001	0.61
	item 18	43.97	<0.001	0.74
	item 19	42.43	<0.001	0.68
	item 20	43.22	<0.001	0.69
	item 54	35.98	<0.001	0.60
Striving to avoid the danger	item 24	23.76	<0.001	0.68
	item 37	12.57	<0.001	0.21
	item 40	23.27	<0.001	0.68
	item 48	11.95	<0.001	0.21
	item 49	20.79	<0.001	0.48

Notes: Due to the ordinal level of measurement, diagonally weighted least squares (DWLS) estimation was used. Factor loadings (λ) were fully standardized.

Table A3. Standardized factor loadings for The Stress Perception Questionnaire.

Factor	Indicator	*Z*	*p*	λ
Emotional tension	Item 1	19.04	<0.001	0.54
	Item 5	20.56	<0.001	0.61
	Item 9	18.41	<0.001	0.51
	Item 13	3.00	<0.001	0.07
	Item 17	21.77	<0.001	0.66
	Item 21	20.23	<0.001	0.58
	Item 25	21.39	<0.001	0.63
External stress	Item 2	11.95	<0.001	0.21
	Item 6	21.77	<0.001	0.66
	Item 10	20.60	<0.001	0.61
	Item 14	20.57	<0.001	0.59
	Item 18	3.94	<0.001	0.11
	Item 22	43.22	<0.001	0.69
	Item 26	43.22	<0.001	0.69
Intrapsychic stress	Item 3	20.60	<0.001	0.61
	Item 7	20.01	<0.001	0.57
	Item 11	19.04	<0.001	0.53
	Item 15	3.94	<0.001	0.10
	Item 19	19.69	<0.001	0.57
	Item 23	20.57	<0.001	0.59
	Item 27	17.17	<0.001	0.48

Notes: Due to the ordinal level of measurement, diagonally weighted least squares (DWLS) estimation was used. Factor loadings (λ) were fully standardized. The numbering of the items is consistent with the original scale. The Faking Good Subscale was not included in the analysis.

Table A4. Standardized factor loadings for the Scale of Ties in the Workplace.

Factor	Indicator	*Z*	*p*	λ
Ties in the workplace	Item 1	16.97	<0.001	0.59
	Item 2	16.37	<0.001	0.58
	Item 3	19.76	<0.001	0.74
	Item 4	19.85	<0.001	0.75
	Item 5	19.60	<0.001	0.68
	Item 6	18.83	<0.001	0.67

Notes: Due to the ordinal level of measurement, diagonally weighted leas squares (DWLS) estimation was used. Factor loadings (λ) were fully standardized.

Table A5. Standardized factor loadings for the Areas of Worklife Questionnaire.

Factor	Indicator	*Z*	*p*	λ
Workload	Item 1	17.97	<0.001	0.53
	Item 2	17.71	<0.001	0.54
	Item 3	21.61	<0.001	0.70
	Item 4	21.36	<0.001	0.68
	Item 5	19.35	<0.001	0.60
	Item 6	17.60	<0.001	0.53
Sense of control	Item 7	18.25	<0.001	0.55
	Item 8	21.86	<0.001	0.75
	Item 9	22.07	<0.001	0.74
Gratifications	Item 10	21.50	<0.001	0.72
	Item 11	21.46	<0.001	0.71
	Item 12	4.50	<0.001	0.09
	Item 13	15.96	<0.001	0.36
Social support	Item 14	28.49	<0.001	0.78
	Item 15	30.23	<0.001	0.87
	Item 16	26.76	<0.001	0.71
	Item 17	22.17	<0.001	0.56
	Item 18	19.37	<0.001	0.41
Support Assessment	Item 19	34.40	<0.001	0.77
	Item 20	32.60	<0.001	0.72
	Item 21	32.94	<0.001	0.73
	Item 22	34.47	<0.001	0.76
	Item 23	25.62	<0.001	0.54
	Item 24	24.15	<0.001	0.47
Values	Item 25	32.69	<0.001	0.80
	Item 26	31.03	<0.001	0.69
	Item 27	29.74	<0.001	0.68
	Item 28	27.87	<0.001	0.61
	Item 29	24.631	<0.001	0.51

Notes: Due to the ordinal level of measurement, diagonally weighted least squares (DWLS) estimation was used. Factor loadings (λ) were fully standardized.

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